

### REMARKS

Reconsideration of the application is requested in view of the above amendments and the following remarks. Claims 28-31 have been amended. New claim 33 has been added. The claim amendments and new claim 33 are fully supported by the originally filed application. No new matter has been added.

#### § 102 Rejection

Claims 1, 26, 28, 29, 31 and 32 were rejected under 35 U.S.C. § 102(b) as being anticipated by Trowbridge (U.S. 4,836,812). Applicants respectfully traverse this rejection.

Trowbridge discloses a forced air gas fired heating device that includes an air conduit 46, a blower 36, 38, and a filter 18. The blower 36, 38 draws cool air into the device through a grill 16 and forces the cool air into the air conduit 46 and out of the air outlets 20, 22, 24, 26, 28. The filter 18 is positioned at the inlet into the air conduit 46 in a chamber at a side of the housing 12 and a combustion chamber of the device. The air conduit 46 transverses back and forth through a heated air space within the combustion chamber where combustion occurs at the burners 70, 72, 74, 76, 78. A chamber 38 located adjacent to a back wall of the housing 12 is sized to house the blower 36, 38 and a chamber (not numbered) on an opposing side of the housing 12 from the filter 18 houses a regulating valve 82 that is coupled to the burners 70, 72, 74, 76, 78 via a supply line 80. A still further chamber (not numbered) extends from beneath a bottom panel (not numbered) of the combustion chamber and extends between a front panel of the combustion chamber (not numbered) and a front panel of the outer enclosure (not numbered).

While Trowbridge discloses a plurality of chambers positioned at various locations surrounding the combustion chamber, these chambers do not define "an air passage around at least the top, bottom, and rear panels of the combustion chamber enclosure, the air passage having an air intake into the plenum and an air exhaust out of the plenum," as required by claim 1. The only air passage disclosed by Trowbridge that includes both an air intake and air exhaust involves the conduit 46 and the chamber defined along a side of the combustion chamber that houses the fan 36 and filter 18. The remaining portions of the conduit 46 travel within the

combustion chamber and do not at any point extend around the top, bottom and rear panels of the combustion chamber. Therefore, Trowbridge fails to disclose every limitation of claim 1.

Concerning claim 28, Trowbridge fails to disclose "arranging the plenum between the combustion chamber enclosure and the outer enclosure with the air intake position vertically below the combustion chamber enclosure and the air exhaust position vertically above the combustion chamber enclosure," or "drawing intake air into the plenum through the air intake and exhausting the intake air out of the plenum through the exhaust outlet." As discussed above, Trowbridge discloses a system for moving air through the heating device that includes an air inlet only at the inlet to the blower 36 and an outlet at the outlet openings 20, 22, 24, 26, 28. The outlets 20, 22, 24, 26, 28 are positioned vertically below a top panel of the combustion chamber wherein the combustion occurs at the burners 70, 72, 74, 76, 78. Therefore, Trowbridge fails to disclose "the air exhaust position vertically above the combustion chamber enclosure," as required by claim 28 and the claims that depend from it.

Concerning claim 31, Trowbridge fails to disclose "positioning the plenum in its entirety between the combustion chamber enclosure and the outer enclosure." The air plenum disclosed by Trowbridge is defined at least in part by the conduit 46. The conduit 46 extends within the combustion chamber of the heating device and extends along only a small portion of its length at a location outside of the combustion chamber. Therefore, Trowbridge clearly fails to disclose "positioning the plenum in its entirety between the combustion chamber enclosure and the outer enclosure."

Applicants submit that Trowbridge fails to disclose every limitation of claim 32 for at least those reasons discussed above related to claim 31.

#### § 103 Rejections

Claims 1, 26, 28, 29, 31 and 32 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Lassy (U.S. 3,930,490). Applicants respectfully traverse this rejection.

Lassy discloses a fireplace heater 10 configured for installation into a fireplace opening as a retrofit heating device. The heater includes cold air ducts 30, 31 and hot air ducts 32, 33 positioned on opposing sides within a combustion chamber of a fireplace. A plurality of U-

shaped heat exchange tubes 34 extend between the two sets of ducts 30, 31, and 32, 33. A plurality of bottom heating tubes 41 extend between the lower ducts 30 and 32. While Lassy discloses a screen or filter (positioned in a housing that houses a fan and is positioned at an intake end of the cold air duct 30), Lassy otherwise fails to disclose or suggest the limitations of claims 1, 28, 31 and 32.

Lassy fails to disclose or suggest an outer enclosure or a plenum defined between the outer enclosure and the combustion chamber enclosure. Lassy also fails to disclose or suggest positioning or disposing a filter within a plenum that is defined between the outer enclosure and the combustion chamber enclosure. In fact, Lassy teaches away from a structure that defines a plenum between an outer enclosure and a combustion chamber enclosure. The heating system disclosed by Lassy is defined to optimize heat transfer between the air traveling in the ducts and tubes of the system (e.g., ducts 30, 31, 32, 33 and tubes 34, 41) and the fire and combustion products within the combustion chamber. In order to obtain this optimized heat exchange, the system disclosed by Lassy exposes the ducts 30-33 and tubes 34, 31 directly to the fire and in contact with the combustion gases. Lassy states that "the positioning of the heating tubes and their configuration are such that the greatest amount of heat will be extracted from the fireplace without diminishing the draft up the chimney, thereby retaining the operational characteristics of the fireplace in so far as smoke gas discharge is concerned" (see column 5, lines 34-39 of Lassy). Thus, the Lassy system is specifically designed to capture heat within the combustion chamber enclosure produced directly by the fire and carried by the combustion gases before that heat disappears out of the chimney flue.

Therefore, one skilled in the art reviewing Lassy would find no disclosure or suggestion of positioning the structure defining the air passage at a location outside of the combustion chamber. A structure having the air plenum disposed outside of the combustion chamber would not fulfill the purposes, intent or advantages central to the Lassy invention. Applicants further submit that the integration of the Lassy device into a fireplace in order to provide a "contiguous single structure" as suggested by the rejection would not render obvious claims 1, 26, 31 and 32. Modifying the Lassy heating system into a single structure would still result in a heating system in which the ducts and heat exchange tubes would be positioned in direct exposure to the flame and combustion gases within the combustion chamber.

Furthermore, there is no teaching or suggestion by Lassy of a plenum defined between a combustion chamber enclosure and an outer enclosure wherein the plenum defines "an air passage around at least the top, bottom and rear panels of the combustion chamber enclosure," as required by claim 1, "arranging the plenum between the combustion chamber enclosure and the outer enclosure with," as required by claim 28, "positioning the plenum in its entirety between the combustion chamber enclosure and the outer enclosure," as required by claim 31, or "a plenum disposed in it entirety between the combustion chamber enclosure and the outer enclosure," as required by claim 32.

Applicants respectfully traverse the "official notice" given as to the arrangement of parts required by claims 1, 28, 31 and 32. Modifying the Lassy system in order to position the air passage outside of the combustion chamber enclosure would render the Lassy system in opposition to its intended purpose and function. Therefore, Lassy in view of ordinary skill and the official notice fails to disclose or suggest every limitation of claims 1, 28, 31 and 32 and fails to establish a prima facie case of obviousness of the claimed limitations.

An air plenum disposed outside of the combustion chamber enclosure provides certain advantages not possible with the Lassy system. For example, a heating appliance such as a fireplace inherently absorbs a certain amount of heat from the source of heat within the heating appliance (e.g., combusting fuel). This absorbed heat passes into the building structure that surrounds the fireplace or into the living space in which the heating appliance is exposed. Typically, much of this heat is not effectively returned to the living space or used for some desired purpose because it is lost, for example, into the building structure. By defining an air plenum between an outer enclosure of the heating appliance and the combustion chamber enclosure and moving air through that plenum, the air within the plenum can be heated with heat that has been absorbed by the combustion chamber and radiated towards the outer enclosure through the plenum. As a result, the otherwise lost heat is at least partially captured by the air in the plenum that surrounds the combustion chamber. Lassy fails to recognize that such an advantage is possible and further fails to disclose or suggest any structure that would be useful for collecting such radiant heat outside of the combustion chamber enclosure. Therefore, Lassy fails to disclose or suggest every limitation of claims 1, 28, 31 and 32 for this additional reason.

The Lassy system discloses air intakes and outlets to the system at locations spaced laterally or to the side of the combustion chamber and vertically above a bottom floor of the combustion chamber (see Figures 1 and 3 of Lassy). Therefore, Lassy fails to disclose or suggest "arranging the plenum between the combustion chamber enclosure and the outer enclosure with the air intake position vertically below the combustion chamber enclosure and the air exhaust position vertically above the combustion chamber enclosure," as required by claim 28. Such an arrangement of intake and exhaust outlets and inlets for the plenum provide an additional advantage not contemplated by Lassy. When the air intake is positioned below the combustion chamber and the air exhaust is positioned above the combustion chamber, a natural convection flow of heated air can occur without the use of exterior forces such as a blower or vacuum force. As air is heated within the plenum, the air naturally moves vertically upward so as to be exhausted out of the air exhaust, which creates a suction force that draws relatively cool room air into the plenum through the air intake. The Lassy system fails to disclose or suggest an air inlet and air exhaust configuration that would permit such natural convection. Thus, Lassy fails to disclose or suggest every limitation of claim 28 for this yet further reason.

Claims 27 and 30 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Trowbridge or Lassy in view of Morrow (U.S. 5,656,242). Applicants respectfully traverse this rejection. As discussed above, Trowbridge and Lassy fail to disclose or suggest every limitation of claims 1 and 28. Morrow fails to remedy the deficiencies of Trowbridge and Lassy as they relate to claims 1 and 28. Therefore, claims 27 and 30 are allowable for at least the reason they are dependent upon an allowable base claim. Applicants do not concede the correctness of this rejection.

#### New claims

New claim 33 is directed to a heating appliance that includes a plenum as set forth in claim 1 and additionally includes a blower disposed in the plenum below the bottom panel of the combustion chamber enclosure. Claim 33 also requires that the air intake is positioned vertically below the bottom panel and the air exhaust is positioned vertically above the top panel. Applicants submit that the cited references fail to disclose or suggest every limitation of claim 33 for at least those reasons discussed above related to the deficiencies of Trowbridge and Lassy as


they apply to claims 1, 28, 31 and 32. Consideration of allowance of new claim 33 is respectfully requested.

In view of the above, Applicants respectfully request reconsideration of the application in the form of a Notice of Allowance.

Respectfully submitted,

MERCHANT & GOULD P.C.  
P.O. Box 2903  
Minneapolis, Minnesota 55402-0903  
(612) 332-5300

Date: April 12, 2005

  
Joshua M. Randall  
Reg. No. 50,719  
JNR:ac